International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 328-330 www.ijaem.net ISSN: 2395-5252

Plant Growth Testing Device

1. Shraddha Pachouri 2. Atul Keshav 3. Nishi Gupta 4. Prof. Pratyesh Jaiswal

1. Student, Department of Mechanical & Automobile Engineering Madhav Institute of Technology and Science, Gwalior, M.P.
2. Student, Department of Mechanical & Automobile Engineering Madhav Institute of Technology and Science, Gwalior, M.P.
3. Student, Department of Mechanical & Automobile Engineering Madhav Institute of Technology and Science, Gwalior, M.P.
4. Associate Professor, Department of Mechanical & Automobile Engineering Madhav Institute of Technology & Science, Gwalior, M.P.
Corresponding Author: Shraddha Pachouri

Date of Submission: 15-08-2020 Date of Acceptance: 31-08-2020

ABSTRACT: in the modern time when the infrastructural development has been seen as the economic development of a nation, and for that, the requirement of land is most important factor and it is acquired by cutting large scale forests and trees. These type of acquisitions left behind a lot of environmental problems and climate change. India is a mega diverse country and carry world's ninth largest forest cover with 23% of its land is covered with trees it's our duty to do both things conservation of environment and expansion of infra projects. For that we have made a project which can be prove handful with the idea of conservation as we know the basic elements of afforestation and growing trees, it requires a lot of care and attention for the first three to four years to become a full grown tree. As the name itself suggests the idea of project but I would like to take you through the short tour of our project, we have made this project to reduce the problems a plant face while growing like water requirement, ph. of soil, moisture it need, unwanted animals grazing. we were mandated to make this project it is made on the chassis of a remote control car that will hold its circuit which will consist of sensors like PIR , resistors , transistors and microcontroller to give it instruction and beside it we have used 3 way soil meter, motor to run the gadget, and a battery to store it's power.

KEYWORDS: Autonomous,sensors, 3 way soil meter, microcontroller, pir sensors, motor, battery.

I. INTRODUCTION

The increase in deforestation around the world is one of the reasons for the cause of various serious disasters, and hence, a cause of death for thousands of people around the world.FAO estimates that 10.4 million hectares of land were permanently deforested each year in the period from 2000 to 2005, an increase since the 1990-2000 period, when around 10.16 million hectares was lost. In India, the National Emergency Response Centre (NDMI) reported, recently, that nearly 700,000 people evacuated, and around 14,350,000 people affected across the country due to either landslides or floods. The worst affected States remain Bihar, with 7,718,000 displaced people, and Assam, with approximately 81,700 displaced. The death toll reached 868 people throughout the country. Trees and plants help us protect from floods, also it holds soil together which prevents landslide to a great extent. Various environmentalists around the world, are fighting for the safety of environment, and are promoting plantation on a serious note. Also, there are various organizations that are promoting afforestation. But planting a tree, and taking care of it till its fully grown, is a tough task, also it requires, serious monitoring of each and every aspect of a plant for its growth, like moisture content, pH value of soil, proper sunlight, etc. Technology has developed to a great extent, and is giving help to all the fields. Various sensors, microcontrollers, resistors, can be connected and used to monitor various aspects for proper growth of a plant. Afterthe various aspects are monitored using a wireless system, it can be used, to regulate the requirements of each plant, that is being grown in the particular area.

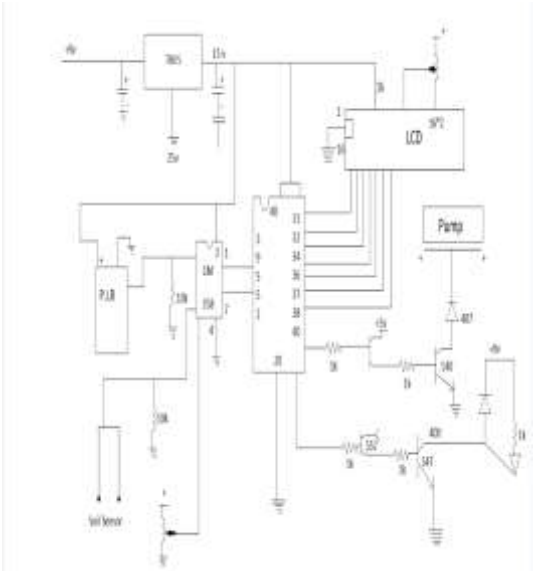
International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 328-330 www.ijaem.net ISSN: 2395-5252

II. REQUIREMENTS:

i. **Chassis** It is the frame of the vehicle on which all the components are mounted.
ii. **Microcontroller** A device which provides the output in desirable format by processing the input data. It is a less sophisticated PC which is integrated on a single circuit board.
iii. **Motor**It is a device used for providing rotation to wheels.
iv. **PIR Sensor**PIR sensors allow you to sense motion, almost always used to detect whether a human has moved in or out of the sensors range.
v. **3-way soil meter**Three Way Soil Meter with PH Detector is a tool to test the soil conditions (Moisture/Light/ PH).
vi. **Battery**It is an electronic device used to provide power for proper working of various components of the device.
vii. **Pump**A pump is a device that is used to transfer a fluid from one place to another**.**

III. CONSTRUCTION

The Four wheeler moving device control by the remote controlled, mounted with three-way soil meter which detects the pH and soil moisture content whenever it goes below the prescribed range. The microcontroller receives signals from the three-way soil meter through the transducer amplifier which amplifies the input signals into the microcontroller comprise of memory and processor and retain control by sending signals to the LCD display and in parallel circuit with npn transistor and resistance to the dc motor based centrifugal pump and Battery .The PIR sensors mounted on the device body sense the moment of any restricted entry inside the region and automatically produces heavy alarm . The circuit diagrams comprises of voltage regulator installed with capacitors connected with the PIR sensors, soul sensor probe via transducer amplifier is connected to the microcontroller and on the other side microcontroller connected to PNP transistor which is fed by the input signals and output of PNP transistor connected to a small DC motor bases centrifugal pump and transformer with two diode connected to the battery.



IV. WORKING PRINCIPLE

The three-way soil meter sense the analogue input through the moisture sensor probes and a resistance between these two probe is sending analogue input signal of 8 bit wide feed into the microcontroller . The analogue signals receive by the microcontroller convert into the decimal inside it and save the record in temporary memory. This data is provided to the LCD display. 16 LCD display stepping the data continuously. Microcontroller converts this data into ASCII code. We connect two switches with the micro controller for set a preset value which is sensed and compared by micro controller with presentable value. Circuit is off while value is to be compared and when value is compared then one bit of microcontroller is active automatically and run the pump. Output of the PnP transistor is connected to the dc motor pump control. Complete circuit is regulated 5 volt power supply. One step down transformer equipped with two diode and capacitor circuit convert 220 volt ac into 5 volt dc power supply.

V. CONCLUSION

As an engineer it is our utmost priority to see daily life problems and find a solution for that. By making this project we want to show that for a country like India development can only be achieved if its environment is protected because a country which has 1.35bn peoples living in all climatic condition and ecosystem from tropical to sub-tropical region if environment protection is bypassed it will cause huge loss to both public property and lives of innocent and we have seen these things in past like Bhopal gas tragedy, Delhi gas leak or recently happened the Vishakhapatnam

lg polymer gas leak these all had happened due to the failure of system. If we want to make a self-reliance India we must ensure our environment is well protected.

REFERENCE

[1]. Sheikh Ferdoush and Xinrong Li, "Wireless Sensor Network System Design uses Raspberry Pi and Arduino for Environmental Monitoring Applications" in the 9th International Conference on Future Networks and Communications.

[2]. Sharmila Gaikwad, Akshay Vishwanath, LalitBhosle, Rishabh Bhandari, "Internet controlled vehicle", International Journal of Recent and Innovation Trends in Computing and Communication

[3]. https://rainforests.mongabay.com/08-deforestation.html

[4]. https://reliefweb.int/disaster/fl-2020-000164-ind